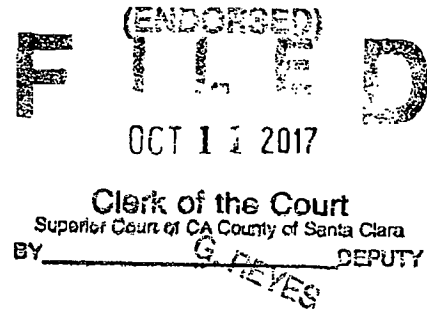


EXHIBIT 1



1 GUTRIDE SAFIER LLP
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9
10 SUPERIOR COURT OF THE STATE OF CALIFORNIA
11 COUNTY OF SANTA CLARA

12 LOUIS HICKS, an individual, on
13 behalf of himself, the general
public, and those similarly situated,

14 Plaintiff,

15 v.

16 HP INC.,

17 Defendant.
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Case No. 17CV317178

Unlimited Civil Case

Class Action Complaint for Fraud,
Deceit, and/or Misrepresentation;
Breach of Contract; Violation of the
Consumer Legal Remedies Act; False
Advertising; Negligent
Misrepresentation; Unfair, Unlawful,
and Deceptive Trade Practices;
Violation of The Florida Deceptive and
Unfair Trade Practices Act; Breach of
Implied Warranty; and Violation of the
Song-Beverly Consumer Warranty Act

Jury Trial Demanded

1 Louis Hicks, by and through his counsel, brings this Class Action Complaint
2 against Defendant, on behalf of himself, and those similarly situated, for fraud,
3 deceit, and/or misrepresentation; violation of the Consumer Legal Remedies Act;
4 false advertising; negligent misrepresentation; unfair, unlawful, and deceptive
5 trade practices; violation of the Florida Deceptive and Unfair Trade Practices Act;
6 breach of express warranty; and violation of the Song-Beverly Consumer
7 Warranty Act. The following allegations are based upon information and belief,
8 including the investigation of Plaintiff's counsel, unless stated otherwise.

9 Introduction

10 1. This case concerns laptop computers that were marketed and sold by
11 HP as including Universal Serial Bus ("USB") 3.1 "Gen 1" ports (hereinafter
12 referred to as the "Purported USB 3.1 Laptops.") HP specifically marketed,
13 advertised and represented to consumers that the USB ports of the Purported USB
14 3.1 Laptops were capable of transferring data at rates of 5 gigabits (Gb) per
15 second, which it denoted as "5Gb/s." (In some of the laptops, HP compounded the
16 misrepresentation by using the abbreviation GB which means *gigabytes* instead of
17 *gigabits*; a *gigabyte* contains eight *gigabits*, so the advertised speed of 5GB/s
18 would equate to 40Gb/s.)

19 2. The claimed transfer speed was false. As Plaintiff discovered after
20 purchasing a Purported USB 3.1 Laptop advertised with a data transfer rate of
21 5Gb/s, the USB ports are incapable of transferring data at anywhere near the
22 speeds advertised. Rather, the USB ports are capable of transferring data at rates
23 ranging from approximately 665 megabits/second (equal to 0.65 Gb/s) up to 1,231
24 megabits/second (equal to 1.2 Gb/s). These rates are only 13.3% to 24.6% as fast
25 as the 5 Gb/s rate advertised by HP (and only 1.7% to 3.1% as fast as the 5 GB/s
26 rate).

9. In accordance with California Civil Code Section 1780(d), Plaintiff files herewith a declaration establishing that he purchased an HP Envy laptop computer at a Best Buy store in Anaheim, California.

10. Plaintiff accordingly alleges that jurisdiction and venue are proper in this Court.

Substantive Allegations

11. The market for laptop computers is fiercely competitive. Laptop manufacturers continually attempt to gain market share by introducing the latest cutting-edge features that are attractive to consumers. One such feature is the inclusion of one or more “USB 3.1” ports—data ports (otherwise known as “hosts”)—that comply with Revision 3.1 of the USB specification.

A. The USB Specification and its Data Transfer Rate Requirements

12. The USB specification was developed by a number of companies that collectively formed the USB Implementers Forum, Inc. (“Implementers Forum”), a non-profit corporation organized for the purposes of developing and distributing specifications and other documents that augment, enhance, or extend the USB specification. The Implementers Forum’s six-member Board of Directors includes HP Inc. and its representative, Alan Berkema.

13. The Implementers Forum released the USB 1.0 specification in 1996. The USB 1.0 specification specified two data transmission modes: (i) “Low-Bandwidth” (providing 1.5 megabits/s); and (ii) “Full-Bandwidth” (providing 12 megabits/s).

14. In April 2000, the Implementers Forum released the USB 2.0 specification, which added a third data transmission mode: “Hi-Speed” (providing 480 megabits/s).

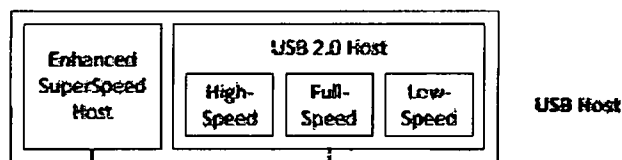
15. On November 12, 2008, the Implementers Forum released the USB 3.0 specification, which added a fourth data transmission mode: “SuperSpeed” (providing 5 gigabits/s). As described in the most recent version of the USB specification, “USB 3.0 was the USB community’s response and provided users with the ability to move data at rates up to 450MB/s while retaining backward compatibility with USB 2.0.” (Ex. B at 1-1.)

16. On July 26, 2013, the Implementers Forum released the USB 3.1 specification, which describes a number of improvements to the USB 3.0 specification. The USB 3.1 specification provides that “Gen 1” devices (like the HP Envy) have a data rate of 5.0 Gbps (i.e., gigabits/second):

Characteristic	Enhanced SuperSpeed USB
Data Rate	Gen 1 (5.0 Gbps), Gen 2 (10 Gbps)

(Ex. B at 3-4.)

17. The USB 3.1 Specification refers to the USB ports of personal computers—like the laptop computers at issue here—as “hosts.” Like all USB 3-compliant devices, hosts must be capable of transferring data at USB 2.0 speeds, as well as Enhanced SuperSpeed:



(Ex. B at 3-2.)

18. The USB 3.1 Specification also states that “[d]ata transfers complete roughly ten times faster in SuperSpeed mode than in High Speed mode.” (Ex. B at C-27.) The Specification defines “high-speed” as “USB operation at 480 Mbps” (i.e., megabits/second). (*Id.* at 2-4.)

19. The Implementers Forum owns the trademarks to a number of logos corresponding to USB. One such logo is the “SuperSpeed USB Trident” logo:



(Ex. C at 9.) The USB Logo Usage Guidelines state: “The SuperSpeed USB Trident Logo is for use with product that signals at 5 Gbps” (i.e., 5 gigabits/second) (*Id.*) The Guidelines further state that the logo can be used only with a product “based on and compliant with the USB 3.0 and USB 3.1 Gen1 specifications.” (*Id.*)

B. HP’s Purported USB 3.1 Laptops

20. HP has marketed and sold dozens of laptop computers that purportedly have USB 3.1 ports. Of those models, HP has marketed and sold at least twenty-six as being capable of transferring data at 5 gigabits/second (or in some cases, 5 gigabytes/second): Product Nos. W2K45UA#ABA; 1KS89UA#ABA, 1KE91AV_1, 1ZA23AV_1, 2GJ44AV_1, 1KS74UA#ABA, 1KS77UA#ABA, 1KB66AV_1, 1JS54AV_1, 1WC88AV_1, 1WC87AV_1, 1WB97AV_1, Z4Z39UA#ABA, Y3U25AV_1, Z8T48UA#ABA, 1FU11AV_1, 1GK61AV_1, 1DR31AV_1, 1KU35UA#ABA, 2GW59UA#ABA, 1GK62AV_1, 2EB66AV_1, 1KT43UA#ABA, 1KT44UA#ABA, 1KU41UA#ABA, and 1GZ59AV_1.

21. For each of these models, HP provides specifications on its website claiming that the laptop has one or more USB 3.1 ports capable of transferring data at 5 gigabits per second (or in some cases, 5 gigabytes/second). A typical example of such a representation, which Plaintiff saw for the laptop he purchased, is as follows:

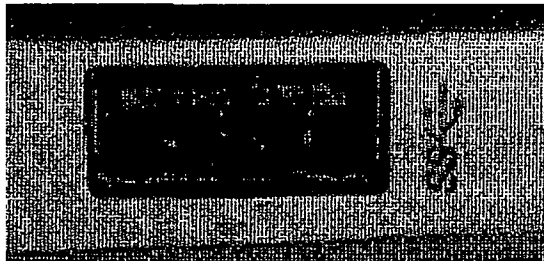
External I/O Ports 1 USB 3.1 Type-C™ Gen 1 (Data Transfer up to 5 Gb/s, DP1.2, HP Sleep and Charge); 2 USB 3.1 Gen 1 (1 HP Sleep and Charge); 1 HDMI; 1 headphone/microphone combo

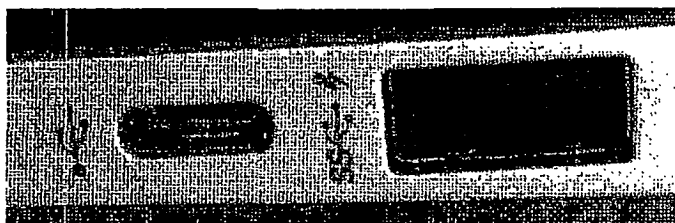
22. Another example of such a representation that compounds the misrepresentation by using the erroneous abbreviation “GB” instead of “Gb” is as follows:

EXTERNAL I/O PORTS 1 USB 3.1 Gen 1 Type-C™ (Data up to 5 GB/s, Power Delivery, DP1.2, HP Sleep and Charge); 2 USB 3.1 Gen 1 (1 HP Sleep and Charge); 1 HDMI; 1 headphone/microphone combo [8,9]

23. With respect to some, but not all, of the Purported USB 3.1 Laptops, HP provided the following disclaimer on its website: “Transfer rate may vary. All performance specifications represent the typical specifications provided by HP’s component manufacturers; actual performance may vary either higher or lower.” This disclaimer only serves to further mislead consumers. Contrary to the language of the disclaimer, the “actual performance” of the USB ports of the Purported USB 3.1 Laptops never begins to approach the advertised transfer rate, let alone “vary ... higher” than the advertised rate. Indeed, no Purported USB 3.1 Laptop has ever transferred data over the USB ports at rates anywhere near 5 gigabits per second, let alone the faster 5 gigabytes per second rate.

24. HP also included various versions of the USB Trident Logo next to the USB ports of the Purported USB 3.1 Laptops. The following photographs are of the model plaintiff purchased:





25. As set forth below (*inter alia*, see *supra*, ¶¶ 31-50), Plaintiff saw these representations prior to making his purchase, and relied on them in making his purchase.

26. HP sells the Purported USB 3.1 Laptops through various retailers, including both brick-and-mortar retailers and online retailers.

27. To promote the sale of the Purported USB 3.1 Laptops, HP provides to all such retailers information relating to the laptops. HP represents to all its retailers that the Purported USB 3.1 Laptops have USB 3.1 ports that support data transfer rates up to 5 gigabits per second (and/or 5 gigabytes per second).

28. HP makes these statements and representations to retailers with the knowledge and intent that the retailers will present this information to consumers.

29. At no time did HP inform consumers or its retailers that the Purported USB 3.1 Laptops do not have USB 3.1 ports.

30. At no time did HP inform consumers or its retailers that the USB ports of the Purported USB 3.1 Laptops are incapable of transferring data at the 5 gigabits/second rate required by the USB 3.1 specification, let alone the 5 gigabytes/second rate advertised by HP for some models of the Purported USB 3.1 Laptops.

C. Plaintiff's Purchase of a Purported USB 3.1 Laptop and Discovery That It Lacks USB 3.1 Ports

31. In early 2017, Plaintiff was shopping for a new laptop. He was specifically looking for a highly portable laptop that could transfer data to and

1 from external USB 3.1 storage devices. Plaintiff researched his options using a
2 variety of resources available on the Internet, including HP's website.

3 32. One of the laptops advertised on HP's website was the HP "Envy"
4 laptop, model number m6-aq103dx; Product No. W2K45UA#ABA. Plaintiff saw
5 the representation on HP's website that the Envy had USB 3.1 ports, capable of
6 transferring data "up to 5Gb/s" (i.e., gigabits per second). Plaintiff also saw the
7 product specifications on the website, stating "USB-C: Charge and transfer data at
8 5Gbs from one reversible port."

9 33. Before purchasing the product, Plaintiff also reviewed and relied on
10 HP's representations about the USB ports on a demonstration model of the
11 product at the retail store. In particular, Plaintiff saw the SuperSpeed USB Trident
12 logo next to the Envy's USB ports.

13 34. The inclusion of USB 3.1 ports, along with the advertised rapid transfer
14 rate of these ports, was important to Plaintiff because he intended to access and
15 transfer large files from external USB 3.1 storage devices.

16 35. In reliance on Defendant's representations, Plaintiff purchased the
17 Envy, in February 2017, from a Best Buy store in Anaheim, California.

18 36. After purchasing and using the Envy, Plaintiff discovered that the
19 laptop's purported USB 3.1 ports are incapable of achieving the 5.0
20 gigabits/second data transfer rates required by the USB 3.1 specification and
21 advertised by HP.

22 37. Plaintiff's investigator independently verified Plaintiff's discovery that
23 the Envy's purported USB 3.1 ports transfer files at rates far below the USB 3.1
24 specification.

25 38. In September 2017, Plaintiff's investigator obtained the same model of
26 laptop that plaintiff had purchased (i.e., model number m6-aq103dx; Product No.

1 W2K45UA#ABA), for the purposes of testing the transfer speed of the laptop's
2 USB ports.

3 39. In the first test, the investigator used a Patriot 32GB Supersonic Rage
4 USB 3 Flash Drive. The investigator plugged the Patriot drive into one of the
5 Envy's supposed USB 3.1 ports, and transferred a 32,000 Megabit file from the
6 Patriot to the Envy's solid state drive. The transfer rate was only 1,230.8 megabits
7 (equal to about 1.2 gigabits) per second.

8 40. Next, the investigator transferred the same file from the Envy to the
9 Patriot Rage. The transfer rate was 239.1 megabits (equal to about 0.23 gigabits)
10 per second.

11 41. Next, the investigator used an Imation Pocket Pro USB 3 external USB
12 flash drive. The investigator transferred the same 32,000 Megabit file from the
13 Imation Pocket Pro to the Envy's built-in hard drive. The transfer rate was 1,185.2
14 megabits (equal to about 1.16 gigabits) per second.

15 42. The investigator then transferred the same file from the Envy to the
16 Imation Pocket Pro. The data transfer rate was 665.3 megabits (equal to about
17 0.65 gigabits) per second.

18 43. Next, the investigator attached a SanDisk Extreme 900 solid state drive
19 to the Envy's purported USB 3.1 Gen 1 Type-C port. The investigator chose the
20 SanDisk Extreme 900 because it is one of the highest-performing USB 3.1 storage
21 devices available, and is capable of transferring data at up to 850 megabytes
22 (equal to 6,800 megabits or 6.8 gigabits) per second. But, the Envy fared no better
23 in this test. Transferring a 32,000 Megabit file from the SanDisk Extreme 900 to
24 the Envy occurred at only 796.3 megabits (or about 0.8 gigabits) per second.
25 Transferring the same file from the Envy to the SanDisk Extreme 900 occurred at
26 only 418.8 megabits (or about 0.42 gigabits) per second.

1 44. Accordingly, the highest data transfer rate measured by Plaintiff's
2 investigator was 1,230.8 megabits (or about 1.2 gigabits) per second. That rate is
3 only about 24% as fast as the 5 gigabit/second speed required by the USB 3.1
4 specification and advertised by HP for the Envy.

5 45. All tests described above were performed on the Envy as it existed after
6 being taken out of the box. No other applications were running on the Envy when
7 the tests were performed. No other hardware devices were connected to the Envy.
8 Accordingly, the investigator's tests show how the Envy's purported USB 3.1
9 ports operate in the best-case scenario under normal use.

10 46. Had Plaintiff known that the Envy's USB data transfer rates were so
11 slow, or that they were not in compliance with the USB 3.1 specification, he
12 would not have paid as much for the Envy.

13 47. As a result of HP's misrepresentations, Plaintiff has sustained an out of
14 pocket loss in, at a minimum, the difference in price between an Envy with the
15 USB 3.1 specification and one with a USB 2.0 specification, which could be
16 established using regression techniques such as hedonic regression to analyze
17 market prices of various laptop computers with USB 3.1 and/or USB 2.0 ports
18 and/or survey techniques such as conjoint analysis.

19 48. Plaintiff intends to purchase HP products in the future and specifically
20 wishes to purchase an HP computer with a USB 3.1 complaint port so that he can
21 benefit from the higher transfer speeds. He therefore is likely to be deceived
22 again by any misrepresentations with respect to the USB capabilities of such HP
23 products. Plaintiff will be unable to determine whether such representations are
24 false without purchasing and testing such HP products.

25 49. Before HP released its Purported USB 3.1 Laptops, it tested the speed
26 of their USB ports, and was aware of the transfer rates of which they were

1 capable. HP—one of the world’s largest manufacturers of consumer electronics—
2 would not release a product without first testing each of its components.

3 50. In addition, the USB Implementers Forum, of which HP is a board
4 member, requires manufacturers to ensure that their devices actually conform
5 with the USB 3.1 specification, which includes testing the speed of those devices.
6 (*See, e.g.*, Ex. B at 1-2 (“Adopters [of the USB 3.1 specification] can demonstrate
7 compliance with the specification through the testing program as defined by the
8 USB Implementers Forum.”) Accordingly, HP knew that the purported USB 3.1
9 ports were incapable of achieving speeds anywhere near the 5 gigabits/second
10 speed that it advertised and that was required by the USB 3.1 specification.

11 **Class Allegations**

12 51. In addition to his individual claims, Plaintiff brings this action pursuant
13 to Rule 23 of the Federal Rules of Civil Procedure on behalf of a Class consisting
14 of all persons, natural or otherwise, who, while residing in California, purchased
15 a Purported USB 3.1 Laptop.

16 52. Excluded from the Class are HP, its affiliates, successors and assigns,
17 officers and directors, and members of their immediate families.

18 53. The proposed Class is so numerous that joinder of all members is
19 impracticable. The precise number of members in the Class is not yet known to
20 Plaintiff, but he estimates that it is well in excess of 1,000 people.

21 54. There are questions of law and fact that are common to the Class,
22 including, but not limited to, the following:

- 23 • whether the USB ports of the Purported USB 3.1 Laptops are
capable of transferring data at the rates advertised by HP;
- 24 • whether the USB ports of the Purported USB 3.1 Laptops are
25 capable of the data transfer speeds required by the USB 3.1
26 specification;

- whether HP misled class members by representing that the USB ports of the Purported USB 3.1 Laptops are capable of transferring data up to 5 gigabits/second;
- whether HP misled class members by representing that the USB ports of the Purported USB 3.1 Laptops are capable of the data transfer speeds required by the USB 3.1 specification;
- whether the USB Ports of the Purported USB 3.1 Laptops are actually USB 3.1 ports, as defined by the Implementers Forum's USB 3.1 Specification;
- whether HP breached its obligations to the class;
- whether HP engaged in the alleged conduct knowingly, recklessly, or negligently;
- the amount of revenues and profits HP received and/or the amount of monies or other obligations lost by class members as a result of such wrongdoing;
- whether class members are entitled to injunctive relief and other equitable relief and, if so, what is the nature of such relief; and
- whether class members are entitled to payment of actual, incidental, consequential, exemplary, and/or statutory damages plus interest, and if so, what is the nature of such relief.

55. Plaintiff's claims against HP are typical of the claims of the Class because Plaintiff and all other members of the class purchased a Purported USB 3.1 Laptop with the same attendant advertising, warranties, and web-based representations and documentation. With respect to the class allegations, Plaintiff was subject to the exact same business practices and written representations.

56. Plaintiff will fairly and adequately protect the interests of the Class.

57. Plaintiff has demonstrated his commitment to the case, has diligently educated himself as to the issues involved, and to the best of his knowledge does not have any interests adverse to the proposed class.

58. The questions of law and fact common to the members of the class predominate over any questions affecting only individual members.

1 59. A class action is superior to other available methods for a fair and
 2 efficient adjudication of this controversy as many members of the proposed class
 3 have damages arising from HP's wrongful course of conduct which would not be
 4 susceptible to individualized litigation of this kind, including, but not limited to,
 5 the costs of experts and resources that may be required to examine the business
 6 practices in question.

7 60. Given the relative size of damages sustained by the individual members
 8 of the Class, the diffuse impact of the damages, and homogeneity of the issues,
 9 the interests of members of the Class individually controlling the prosecution of
 10 separate actions is minimal.

11 61. There is no litigation already commenced, nor is there anticipated to be
 12 subsequent litigation commenced by other members of the Class concerning HP's
 13 alleged conduct. Consequently, concerns with respect to the maintenance of a
 14 class action regarding the extent and nature of any litigation already commenced
 15 by members of the Class are non-existent.

16 62. Plaintiff is unaware of any difficulties that are likely to be encountered
 17 in the management of this Class Action Complaint that would preclude its
 18 maintenance as a class action.

19 **CAUSES OF ACTION**

20 **Plaintiff's First Cause of Action** 21 **(Fraud, Deceit and/or Misrepresentation)** 22 **On Behalf of Himself and the Class**

23 63. Plaintiff realleges and incorporates by reference all preceding
 24 paragraphs of this complaint as if fully set forth herein.

25 64. As set forth above (*inter alia*, see *supra*, ¶¶ 28-36), HP represented to
 26 Plaintiff and those similarly situated that the Purported USB 3.1 Laptops include
 USB 3.1 ports capable of transferring data at the rate of 5 gigabits and/or

1 gigabytes per second. HP provided specifications on its website stating that the
2 Purported USB 3.1 Laptops contained USB 3.1 ports capable of transferring data
3 at the rate of 5 gigabits and/or gigabytes per second. HP also represented that the
4 Purported USB 3.1 Laptops had USB 3.1 ports by printing the USB Trident logo
5 next to the USB ports on the Purported USB 3.1 Laptops.

6 65. HP further concealed, suppressed, and omitted material facts that would
7 have revealed that the Purported USB 3.1 Laptops do not, in fact, have USB 3.1
8 ports, and that the USB ports of the Purported USB 3.1 Laptops are not, in fact,
9 capable of transferring data at the rate of 5 gigabits/second or 5 gigabytes/second.

10 66. In addition, HP represented to all retailers of the Purported USB 3.1
11 Laptops, including online retailers and brick-and-mortar retailers (such as Best
12 Buy), that the Purported USB 3.1 Laptops include USB 3.1 ports capable of
13 transferring data at the rate of 5 gigabits/second and/or 5 gigabytes/second. HP
14 made these representations by providing to such retailers specifications of the
15 Purported USB 3.1 Laptops, stating that the laptops have USB 3.1 ports capable
16 of transferring data at those rates. HP further concealed, suppressed, and omitted
17 material facts that would have revealed that the Purported USB 3.1 Laptops did
18 not, in fact, contain USB 3.1 ports capable of transferring data at the rate of 5
19 gigabits/second and/or 5 gigabytes/second.

20 67. HP made these representations to retailers with the knowledge and
21 intent that the retailers (such as Best Buy) would represent to Plaintiff, and others
22 similarly situated, that the Purported USB 3.1 Laptops include USB 3.1 ports
23 capable of transferring data at the rate of 5 gigabits/second and/or 5
24 gigabytes/second.

25 68. HP's representations—both those made directly to consumers on HP's
26 website and on the product, and those made indirectly to consumers through
retailers—were false, and HP knew that the representations were false when it

1 made them. In particular, as described above (*supra*, ¶¶ 49-50), HP tested the
2 speed of its purported USB 3.1 ports, and confirmed that the ports were incapable
3 of achieving speeds anywhere near the 5 Gbp/s speed required by the USB 3.1
4 specification.

5 69. HP's misrepresentations and omissions were material at the time they
6 were made. They concerned material facts that were essential to the analysis
7 undertaken by Plaintiff and those similarly situated as to whether to purchase the
8 Purported USB 3.1 Laptops.

9 70. Plaintiff and those similarly situated reasonably relied to their detriment
10 on HP's representations—both those that HP made directly to them, and those
11 that HP made indirectly to them through retailers. Specifically, Plaintiff and those
12 similarly situated purchased Purported USB 3.1 Laptops because they believed
13 that they had USB 3.1 ports. This reliance was reasonable because Plaintiff and
14 those similarly situated could not test whether the laptops' USB ports were
15 actually USB 3.1 ports prior to purchasing them.

16 71. Had Plaintiff and those similarly situated been adequately informed and
17 not intentionally deceived by HP, they would have acted differently by, without
18 limitation, not purchasing (or paying less for) the Purported USB 3.1 Laptops.

19 72. HP had a duty to inform members of the Class at the time of their
20 purchase that the Purported USB 3.1 Laptops did not have USB 3.1 ports, and that
21 the USB ports on the laptops were incapable of transferring data at 5
22 gigabytes/second or 5 gigabits/second. In making its representations and
23 omissions, HP breached its duty to class members. HP also gained financially
24 from, and as a result of, its breach.

25 73. By and through such fraud, deceit, misrepresentations and/or
26 omissions, HP intended to induce Plaintiffs and those similarly situated to alter
their position to their detriment. Specifically, HP fraudulently and deceptively

1 induced Plaintiffs and those similarly situated to, without limitation, to purchase
2 the Purported USB 3.1 Laptops.

3 74. As a direct and proximate result of HP's misrepresentations and
4 omissions, Plaintiffs and those similarly situated have suffered damages. In
5 particular, Plaintiffs seek to recover on behalf of themselves and those similarly
6 situated the amount of the price premium they paid (i.e., the difference between
7 the price consumers paid for the Purported USB Laptops and the price they would
8 have paid but for Defendant's misrepresentations), in an amount to be proven at
9 trial using econometric or statistical techniques such as hedonic regression or
10 conjoint analysis.

11 75. HP's conduct as described herein was willful and malicious and was
12 designed to maximize HP's profits even though HP knew that it would cause loss
13 and harm to Plaintiffs and those similarly situated.

14 **Plaintiff's Second Cause of Action**
15 **(Violation of the Consumers Legal Remedies Act,**
16 **California Civil Code § 1750, et seq.)**
17 **On Behalf of Himself and the Class**

18 76. Plaintiff realleges and incorporates by reference the paragraphs of this
19 Class Action Complaint as if set forth herein.

20 77. This cause of action is brought pursuant to the California Consumers
21 Legal Remedies Act, California Civil Code § 1750, et seq. ("CLRA").

22 78. HP's actions, representations and conduct have violated, and continue
23 to violate the CLRA, because they extend to transactions that are intended to
24 result, or which have resulted, in the sale of goods to consumers.

25 79. Plaintiff and other members of the class are "consumers" as that term is
26 defined by the CLRA in California Civil Code § 1761(d).

1 80. The products that Plaintiff and similarly situated members of the class
2 purchased from HP are “goods” within the meaning of California Civil Code §
3 1761.

4 81. By engaging in the actions, representations, and conduct set forth in
5 this Class Action Complaint, HP has violated, and continue to violate,
6 §§ 1770(a)(2), 1770(a)(3), 1770(a)(4), 1770(a)(5), 1770(a)(7), and 1770(a)(9) of
7 the CLRA. In violation of California Civil Code §1770(a)(2), HP misrepresented
8 the approval or certification of goods. In violation of California Civil Code
9 §1770(a)(3), HP misrepresented the certification by another. In violation of
10 California Civil Code §1770(a)(4), HP used deceptive representations in
11 connection with goods. In violation of California Civil Code §1770(a)(5), HP
12 represented that goods have approval, characteristics, uses, benefits, and qualities
13 that they do not have. In violation of California Civil Code §1770(a)(7), HP’s acts
14 and practices constitute improper representations that the goods and/or services it
15 sells are of a particular standard, quality, or grade, when they are of another. In
16 violation of California Civil Code §1770(a)(9), HP advertised goods with intent
17 not to sell them as advertised.

18 82. Specifically, HP’s acts and practices lead consumers to believe that the
19 Purported USB 3.1 Laptops contain USB 3.1 ports, and that the laptops’ USB
20 ports are capable of transferring data at 5 gigabytes/second and/or 5
21 gigabits/second. To the contrary, the Purported USB 3.1 Laptops do not have
22 USB 3.1 ports, and the laptops’ USB ports are incapable of transferring data at 5
23 gigabytes/second or 5 gigabits/second.

24 83. Plaintiff requests that this Court enjoin HP from continuing to employ
25 the unlawful methods, acts and practices alleged herein pursuant to California
26 Civil Code § 1780(a)(2). If HP is not restrained from engaging in these types of

1 practices in the future, Plaintiff and other members of the class will continue to
2 suffer harm.

3 84. CLRA § 1782 NOTICE. **Irrespective of any representations to the**
4 **contrary in this Class Action Complaint, Plaintiff specifically disclaims, at**
5 **this time, any request for damages under any provision of the CLRA.**

6 Plaintiff, however, hereby provides HP with notice and demand that within thirty
7 (30) days from that date, HP correct, repair, replace or otherwise rectify the
8 unlawful, unfair, false and/or deceptive practices complained of herein. HP's
9 failure to do so will result in Plaintiff amending this Class Action Complaint to
10 seek, pursuant to California Civil Code § 1780(a)(3), on behalf of himself and
11 those similarly situated members of the Class, compensatory damages, punitive
12 damages and restitution of any ill-gotten gains due to HP's acts and practices.

13 85. Plaintiff also requests that this Court award him costs and reasonable
14 attorneys' fees pursuant to California Civil Code § 1780(d).

15 **Plaintiff's Third Cause of Action**
16 **(False Advertising, Business and Professions Code § 17500, et seq. ("FAL"))**
17 **On Behalf of Himself and the Class**

18 86. Plaintiff realleges and incorporates by reference the paragraphs of this
19 Class Action Complaint as if set forth herein.

20 87. Beginning at an exact date unknown to Plaintiff, but within three (3)
21 years preceding the filing of the Class Action Complaint, HP has made untrue,
22 false, deceptive and/or misleading statements in connection with the advertising
23 and marketing of the Purported USB 3.1 Laptops.

24 88. HP has made representations and statements (by omission and
25 commission) that lead reasonable consumers to believe that the Purported USB
26 3.1 Laptops have USB 3.1 ports that are capable of transferring data at 5
gigabytes/second and/or 5 gigabits/second. HP, however, deceptively failed to
inform consumers that (i) the Purported USB 3.1 Laptops do not have USB 3.1

1 ports; and (ii) the USB ports of the Purported USB 3.1 Laptops are incapable of
2 transferring data at 5 gigabytes/second or 5 gigabits/second.

3 89. Plaintiff and those similarly situated relied to their detriment on HP's
4 false, misleading and deceptive advertising and marketing practices. Had Plaintiff
5 and those similarly situated been adequately informed and not intentionally
6 deceived by HP, they would have acted differently by, without limitation, paying
7 less for the Purported USB 3.1 Laptops.

8 90. HP's acts and omissions are likely to deceive the general public.

9 91. HP engaged in these false, misleading and deceptive advertising and
10 marketing practices to increase its profits. Accordingly, HP has engaged in false
11 advertising, as defined and prohibited by section 17500, et seq. of the California
12 Business and Professions Code.

13 92. The aforementioned practices, which HP as used, and continues to use,
14 to its significant financial gain, also constitute unlawful competition and provide
15 an unlawful advantage over HP's competitors as well as injury to the general
16 public.

17 93. Plaintiff seeks, on behalf of those similarly situated, full restitution of
18 monies, as necessary and according to proof, to restore any and all monies
19 acquired by HP from Plaintiff, the general public, or those similarly situated by
20 means of the false, misleading and deceptive advertising and marketing practices
21 complained of herein, plus interest thereon.

22 94. Plaintiff seeks, on behalf of those similarly situated, an injunction to
23 prohibit HP from continuing to engage in the false, misleading and deceptive
24 advertising and marketing practices complained of herein. The acts complained of
25 herein occurred, at least in part, within three (3) years preceding the filing of this
26 Class Action Complaint.

1 95. Plaintiff and those similarly situated are further entitled to and do seek
2 both a declaration that the above-described practices constitute false, misleading
3 and deceptive advertising, and injunctive relief restraining HP from engaging in
4 any such advertising and marketing practices in the future. Such misconduct by
5 HP, unless and until enjoined and restrained by order of this Court, will continue
6 to cause injury in fact to the general public and the loss of money and property in
7 that HP will continue to violate the laws of California, unless specifically ordered
8 to comply with the same. This expectation of future violations will require current
9 and future customers to repeatedly and continuously seek legal redress in order to
10 recover monies paid to HP to which HP is not entitled. Plaintiff, those similarly
11 situated and/or other consumers nationwide have no other adequate remedy at law
12 to ensure future compliance with the California Business and Professions Code
13 alleged to have been violated herein.

14 96. As a direct and proximate result of such actions, HP and the other
15 members of the Class have suffered, and continue to suffer, injury in fact and
16 have lost money and/or property as a result of such false, deceptive and
17 misleading advertising in an amount which will be proven at trial, but which is in
18 excess of the jurisdictional minimum of this Court.

19 **Plaintiff's Fourth Cause of Action**
20 **(Negligent Misrepresentation)**
21 **On Behalf of Himself and the Class**

22 97. Plaintiff realleges and incorporates by reference the paragraphs of this
23 Class Action Complaint as if set forth herein.

24 98. In selling its Purported USB 3.1 Laptops to consumers, HP made false
25 and misleading statements that the Purported USB 3.1 Laptops have USB 3.1
26 ports that are capable of transferring data at 5 gigabytes/second and/or 5
gigabits/second. HP, however, deceptively failed to inform consumers that (i) the
Purported USB 3.1 Laptops do not have USB 3.1 ports; and (ii) the USB ports of

1 the Purported USB 3.1 Laptops are incapable of transferring data at 5
2 gigabytes/second or 5 gigabits/second.

3 99. These representations were material at the time they were made. They
4 concerned material facts that were essential to the decision of Plaintiff and those
5 similarly situated regarding how much to pay for the Purported USB 3.1 Laptops.

6 100. HP made identical misrepresentations and omissions to members of the
7 Class regarding the Purported USB 3.1 Laptops.

8 101. HP should have known its representations to be false, and had no
9 reasonable grounds for believing them to be true when they were made.

10 102. By and through such negligent misrepresentations, HP intended to
11 induce Plaintiff and those similarly situated to alter their position to their
12 detriment. Specifically, HP negligently induced Plaintiff and those similarly
13 situated, without limitation, to purchase the Purported USB 3.1 Laptops at the
14 price they paid.

15 103. Plaintiff and those similarly situated reasonably relied on HP's
16 representation. Specifically, Plaintiff and those similarly situated paid as much as
17 they did for the Purported USB 3.1 Laptops, because HP had represented that the
18 laptops have USB 3.1 ports that are capable of transferring data at 5
19 gigabytes/second and/or 5 gigabits/second.

20 104. Because they reasonably relied on HP's false representations, Plaintiff
21 and those similarly situated were harmed in the amount of the price premium they
22 paid (i.e., the difference between the price consumers paid for the Purported USB
23 Laptops and the price they would have paid but for Defendant's
24 misrepresentations), in an amount to be proven at trial using econometric or
25 statistical techniques such as hedonic regression or conjoint analysis.
26

Plaintiff's Fifth Cause of Action
(Unfair, Unlawful and Deceptive Trade Practices,
Business and Professions Code § 17200, et seq.)
On Behalf of Himself and the Class

105. Plaintiff realleges and incorporates by reference the paragraphs of this Class Action Complaint as if set forth herein.

106. Within four (4) years preceding the filing of this Class Action Complaint, and at all times mentioned herein, HP has engaged, and continues to engage, in unfair, unlawful and deceptive trade practices in California by carrying out the unfair, deceptive and unlawful business practices outlined in this Class Action Complaint. In particular, HP has engaged, and continues to engage, in unfair, unlawful and deceptive trade practices by, without limitation, the following:

- a. falsely and deceptively representing to Plaintiff, and those similarly situated, that the Purported USB 3.1 Laptops have USB 3.1 ports that are capable of transferring data at 5 gigabytes/second and/or 5 gigabits/second;
- b. failing to inform Plaintiff, and those similarly situated, that the Purported USB 3.1 Laptops do not have USB 3.1 ports, and that the laptops' USB ports are incapable of transferring data at 5 gigabytes/second and/or 5 gigabits/second;
- d. engaging in misrepresentation as described herein;
- e. violating the CLRA as described herein; and
- f. violating the FAL as described herein.

107. Plaintiff and those similarly situated relied to their detriment on HP's unfair, deceptive and unlawful business practices. Had Plaintiff and those similarly situated been adequately informed and not deceived by HP, they would have acted differently by, without limitation, paying less for the Purported USB 3.1 Laptops.

108. HP's acts and omissions are likely to deceive the general public.

1 109. HP engaged in these unfair practices to increase its profits.
2 Accordingly, HP has engaged in unlawful trade practices, as defined and
3 prohibited by section 17200, et seq. of the California Business and Professions
4 Code.

5 110. The aforementioned practices, which HP has used to its significant
6 financial gain, also constitute unlawful competition and provides an unlawful
7 advantage over HP's competitors as well as injury to the general public.

8 111. As a direct and proximate result of such actions, Plaintiff and the other
9 members of the Class have suffered and continue to suffer injury in fact and have
10 lost money and/or property as a result of such deceptive, unfair and/or unlawful
11 trade practices and unfair competition in an amount which will be proven at trial,
12 but which is in excess of the jurisdictional minimum of this Court. Among other
13 things, Plaintiff and the class lost the amount of the price premium they paid (i.e.,
14 the difference between the price consumers paid for the Purported USB Laptops
15 and the price they would have paid but for Defendant's misrepresentations), in an
16 amount to be proven at trial using econometric or statistical techniques such as
17 hedonic regression or conjoint analysis;

18 112. Plaintiff seeks, on behalf of those similarly situated, a declaration that
19 the above-described trade practices are fraudulent and unlawful.

20 113. Plaintiff seeks, on behalf of those similarly situated, an injunction to
21 prohibit HP from offering the Purported USB 3.1 Laptops within a reasonable
22 time after entry of judgment, unless the HP modifies its website and other
23 marketing materials to remove the misrepresentations and to disclose the omitted
24 facts. Such misconduct by HP, unless and until enjoined and restrained by order
25 of this Court, will continue to cause injury in fact to the general public and the
26 loss of money and property in that Defendants will continue to violate the laws of
California, unless specifically ordered to comply with the same. This expectation

1 of future violations will require current and future consumers to repeatedly and
 2 continuously seek legal redress in order to recover monies paid to HP to which
 3 HP was not entitled. Plaintiff, those similarly situated and/or other consumers
 4 have no other adequate remedy at law to ensure future compliance with the
 5 California Business and Professions Code alleged to have been violated herein.

6 **Plaintiff's Sixth Cause of Action**
 7 **(Breach of Express Warranty)**
 8 **On Behalf of Himself and the Class**

9 114. Plaintiff realleges and incorporates by reference the paragraphs of this
 10 Complaint as if set forth herein.

11 115. This cause of action is brought pursuant to California Commercial
 12 Code § 2100, et seq. as well as the common law.

13 116. Plaintiff, and those similarly situated, were “buyers” of goods as
 14 defined in California Commercial Code § 2103.

15 117. HP is a “seller” and “merchant” as those terms are defined in California
 16 Commercial Code §§ 2103 and 2104.

17 118. The terms of HP’s Limited Warranty for hardware products such as the
 18 Purported USB 3.1 Laptops state that “HP warrants that the HP Hardware
 19 Products that you have purchased or leased from HP are free from defects in
 20 materials or workmanship under normal use during the Limited Warranty Period.”

21 119. The SuperSpeed USB Trident Logo is an important marketing tool on
 22 laptop computers. It conveys a message to consumers that the USB port can
 23 achieve superior data transfer rates unavailable on devices without it. In
 24 particular, the USB Logo Usage Guidelines state: The USB Logo Usage
 25 Guidelines state: “The SuperSpeed USB Trident Logo is for use with product that
 26 signals at 5 Gbps. (Ex. C at 9.)

1 120. HP's decision to utilize the SuperSpeed USB Trident logo on the
2 Purported USB 3.1 Laptops is an affirmation to consumers that the associated
3 ports are USB 3.1 compliant.

4 121. The following representations of HP were all factors in the decision of
5 Plaintiff and those similarly situated to purchase the Purported USB 3.1 Laptop at
6 the price they paid, and became part of the basis for the transaction: (i)
7 representations on its website (e.g., in the product specifications) that the
8 Purported USB 3.1 Laptop included USB 3.1 Ports; (ii) representations on its
9 website (e.g., in the product specifications) that the Purported USB 3.1 Laptop
10 had USB ports capable of transferring data at 5 gigabytes and/or gigabits per
11 second; and (iii) representations on the laptop itself (i.e., the SuperSpeed USB
12 Trident logo, printed next to USB ports on the laptop).

13 122. Via each of these representations, HP affirmed that the Purported USB
14 3.1 Laptops met the USB 3.1 standards and, in doing so, expressly warranted
15 them as such.

16 123. As set forth above (*inter alia*, see *supra*, ¶¶ 12-30), the Purported USB
17 3.1 Laptops do not, in fact, meet the USB 3.1 requirements.

18 124. HP breached these terms because the Purported USB 3.1 Laptops are
19 defective in that the USB ports, under the laptops' normal user, are incapable of
20 transferring data at the 5 gigabits per second speed required by the USB 3.1
21 Specification.

22 125. HP's representations became part of the basis of the bargain in the
23 purchases by Plaintiff, and those similarly situated, of HP's products, and thus
24 qualify as "express warranties" as defined by section 2313 of the California
25 Commercial Code in connection with the sale of goods to Plaintiff and those
26 similarly situated.

1 126. The defects in the Purported USB 3.1 Laptops were not apparent at the
2 time of purchase, because HP (i) printed the USB Trident logo next to the USB
3 ports on the Purported USB 3.1 Laptops; (ii) failed to disclose that the Purported
4 USB 3.1 Laptops did not have USB 3.1 ports; and (iii) failed to disclose that the
5 USB ports of the Purported USB 3.1 Laptops were incapable of transferring data
6 at the 5 gigabits per second rate required by the USB 3.1 specification.

7 127. As a result of HP's sale of the Purported USB 3.1 Laptops that do not
8 perform as warranted and are unfit for normal use, Plaintiff, and those similarly
9 situated, have suffered damages in the amount of the price premium paid (i.e., the
10 difference between the price consumers paid for the Purported USB Laptops and
11 the price they would have paid but for Defendant's misrepresentations), in an
12 amount to be proven at trial using econometric or statistical techniques such as
13 hedonic regression or conjoint analysis.

14 **Plaintiff's Seventh Cause of Action**
15 **(Violation of the Song-Beverly Consumer Warranty Act,**
16 **Civil Code §§ 1790, *et seq.*)**
17 **On Behalf of Himself and the Class**

18 128. Plaintiff realleges and incorporates by reference the paragraphs of this
19 Complaint as if set forth herein.

20 129. This cause of action is brought pursuant to the Song-Beverly Consumer
21 Warranty Act, California Civil Code §§ 1790, *et seq.* (the "Act").

22 130. Plaintiff and those similarly situated were "buyers" of "consumer
23 goods" as those terms are defined under California Civil Code section 1791. The
24 Purported USB 3.1 Laptops sold to Plaintiff, and those similarly situated, are
25 "consumer goods" as defined in the Act.

26 131. HP is a "manufacturer" as that term is defined in section 1791 of the
Act.

1 132. An implied warranty of merchantability arose out of and was related to
2 HP's sale of the Purported USB 3.1 Laptops.

3 133. HP breached the implied warranty of merchantability. The Purported
4 USB 3.1 Laptops purchased by Plaintiff and those similarly situated are not
5 merchantable because they would not pass without objection in the trade under
6 the contract description.

7 134. As described in detail above (inter alia, see supra, ¶¶ 12-30), the
8 Purported USB 3.1 Laptops would not pass without objection in the trade as a
9 laptop computer with USB 3.1 ports compliant with the USB 3.1 specification. In
10 particular, the USB 3.1 Laptops are not capable of transferring data over USB
11 ports at the USB 3.1 rate of 5 gigabits per second as represented by HP and
12 provided in the contract description. In fact, the USB ports of the Purported USB
13 3.1 Laptops transfer data at rates that are far below the 5 gigabits per second
14 speed required by the USB 3.1 Specification. The ability to transfer data in
15 accordance with the USB 3.1 Specification is a critical feature for purchasers of
16 laptops, particularly because the USB ports on laptops are frequently the only
17 type of ports provided to allow the laptops to communicate with external storage
18 devices.

19 135. Additionally, the Purported USB 3.1 Laptops are not merchantable
20 because they do not conform to the promises or affirmations of fact made on the
21 laptops themselves that they have USB 3.1 ports. HP made promises and
22 affirmations of fact concerning the character and quality of the Purported USB 3.1
23 Laptops to Plaintiff and those similarly situated as a part of the contract of sale of
24 the laptops.

25 136. Specifically, HP represented to Plaintiff and those similarly situated
26 that the Purported USB 3.1 Laptops contained USB 3.1 ports capable of
transferring data at the rate of 5 gigabits and/or gigabytes per second. HP

1 provided specifications on its website stating that the Purported USB 3.1 Laptops
2 contained USB 3.1 ports capable of transferring data at the rate of 5 gigabits
3 and/or gigabytes per second. HP also represented that the Purported USB 3.1
4 Laptops had USB 3.1 ports by printing the USB Trident logo next to the USB
5 ports on the Purported USB 3.1 Laptops

6 137. HP also made statements and representations to its agents, retailers of
7 the Purported USB 3.1 Laptops, including online retailers and brick-and-mortar
8 retailers (such as Best Buy), that the laptops contain USB 3.1 ports capable of
9 transferring data at 5 gigabits and/or gigabytes per second. HP made these
10 representations by providing retailers specifications of the Purported USB 3.1
11 Laptops, stating that the Purported USB 3.1 Laptops contain USB 3.1 ports
12 capable of transferring data at 5 gigabits/second and/or 5 gigabytes/second, and
13 by printing the USB Trident logo next to the USB ports on the Purported USB 3.1
14 Laptops, which were displayed out of the package by brick-and-mortar retailers.

15 138. HP made these representations to retailers with the intent that the
16 retailers (such as Best Buy) would represent to Plaintiff, and others similarly
17 situated, that the Purported USB 3.1 Laptops contain USB 3.1 ports.

18 139. The retailers acted as HP's agent for purposes of providing HP's
19 statements and representations to consumers such as Plaintiff.

20 140. As a result of HP's sale of defective products that do not perform as
21 warranted and are unfit for normal use, Plaintiff, and those similarly situated have
22 suffered damages in the amount of the price premium paid (i.e., the difference
23 between the price consumers paid for the Purported USB Laptops and the price
24 they would have paid but for Defendant's misrepresentations), in an amount to be
25 proven at trial using econometric or statistical techniques such as hedonic
26 regression or conjoint analysis.

141. Plaintiff, and those similarly situated, have suffered and will continue to suffer damages as a result of HP's failure to comply with its warranty obligations. Accordingly, Plaintiff, and those similarly situated, are entitled to recover such damages under the Song-Beverly Act, including damages pursuant to Civ. Code §§ 1791.1(d) and 1974.

142. HP's breaches of warranty, as set forth above, were willful. Accordingly, a civil penalty should be imposed upon HP in an amount not to exceed twice the amount of actual damages.

Prayer for Relief

WHEREFORE, Plaintiff prays for judgment as follows:

A. On Cause of Action Number 1 against Defendant and in favor of Plaintiff and the other members of the Class:

1. An award of compensatory damages in the amount of the price premium paid (i.e., the difference between the price consumers paid for the Purported USB Laptops and the price they would have paid but for Defendant's misrepresentations), in an amount to be proven at trial using econometric or statistical techniques such as hedonic regression or conjoint analysis; and
2. An award of punitive damages, the amount of which is to be determined at trial.

B. On Cause of Action Number 2 against Defendant and in favor of Plaintiff and the other members of the Class:

1. For restitution of the price premium paid (i.e., the difference between the price consumers paid for the Purported USB Laptops and the price they would have paid but for Defendant's misrepresentations), in an amount to be proven at trial using

1 econometric or statistical techniques such as hedonic regression or
2 conjoint analysis;

3 2. for injunctive relief pursuant to California Civil Code section 1780;

4 3. [Reserved]; and

5 4. [Reserved].

6 C. On Causes of Action Numbers 3 and 5 against Defendant and in favor of
7 Plaintiff and the other members of the Class:

8 1. For restitution of the price premium paid (i.e., the difference
9 between the price consumers paid for the Purported USB Laptops
10 and the price they would have paid but for Defendant's
11 misrepresentations), in an amount to be proven at trial using
12 econometric or statistical techniques such as hedonic regression or
13 conjoint analysis, pursuant to, without limitation, the California
14 Business & Professions Code §§ 17200, et seq. and 17500, et seq.;
15 and

16 2. for declaratory and injunctive relief pursuant to, without limitation,
17 the California Business & Professions Code §§ 17200, et seq. and
18 17500, et seq.

19 D. On Cause of Action Number 4 against Defendant and in favor of
20 Plaintiff and the other members of the Class:

21 1. An award of compensatory damages, the amount of which is to be
22 determined at trial; and

23 E. On Cause of Action Numbers 6 and 7 against Defendant and in favor of
24 Plaintiff and the other members of the Class:

25 1. An award of compensatory damages, in the amount of the price
26 premium paid (i.e., the difference between the price consumers paid

1 for the Purported USB Laptops and the price they would have paid
2 but for Defendant's misrepresentations), in an amount to be proven
3 at trial using econometric or statistical techniques such as hedonic
4 regression or conjoint analysis;

- 5 2. An award of punitive damages, the amount of which is to be
6 determined at trial; and
7 3. An award of statutory damages according to proof.

8 **Jury Trial Demanded**

9 Plaintiff demands a trial by jury.

10
11 Respectfully submitted,

12 Dated: October 10, 2017

13 **GUTRIDE SAFIER LLP**

14 
Adam J. Gutride, Esq.

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18 Facsimile: (415) 449-6469

19 Attorneys for Plaintiff
20
21
22
23
24
25

Exhibit A

EXHIBIT A

I, Louis Hicks, declare:

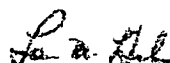
1. I am the Plaintiff in this action. If called upon to testify, I could and would competently testify to the matters contained herein based upon my personal knowledge.

2. I submit this Declaration pursuant to California Code of Civil Procedure section 2215.5 and California Civil Code section 1780(d).

3. I am a resident of Anaheim, California. As set forth in my complaint, while located in Anaheim, California, I purchased an HP Envy laptop computer.

I declare under penalty of perjury under the laws of California that the foregoing is true and correct.

Executed this 3rd day of October, 2017 in Anaheim, California.



Louis Hicks

Exhibit B

Universal Serial Bus 3.1 Specification

Hewlett-Packard Company

Intel Corporation

Microsoft Corporation

Renesas Corporation

ST-Ericsson

Texas Instruments

Revision 1.0

July 26, 2013

Universal Serial Bus 3.1 Specification, Revision 1.0

Revision History

Revision	Comments	Issue Date
1.0	Initial release. USB 3.0	November 12, 2008
	Incorporated errata and ECNs	June 6, 2011
1.0	Initial release. USB 3.1	July 26, 2013

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Please send comments to techsup@usb.org

For industry information, refer to the USB Implementers Forum web page at <http://www.usb.org>

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Acknowledgement of Technical Contribution

Dedication

Dedicated to the memory of Brad Hosler, the impact of whose accomplishments made the Universal Serial Bus one of the most successful technology innovations of the Personal Computer era.

The authors of this specification would like to recognize the following people who participated in the USB 3.0 Bus Specification technical workgroups. We would also like to acknowledge the many others throughout the industry who provided feedback and contributed to the development of this specification.

Promoter Company Employees

Alan Berkema	Hewlett-Packard Company
Walter Fry	Hewlett-Packard Company
Anthony Hudson	Hewlett-Packard Company
David Roderick	Hewlett-Packard Company
Kok Hong Chan	Intel Corporation
Huimin Chen	Intel Corporation
Bob Dunstan	Intel Corporation
Dan Froelich	Intel Corporation
Howard Heck	Intel Corporation
Brad Hosler	Intel Corporation
John Howard	Intel Corporation
Rahman Ismail	Intel Corporation
John Keys	Intel Corporation
Yun Ling	Intel Corporation
Andy Martwick	Intel Corporation
Steve McGowan	Intel Corporation
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Duane Quiet	Intel Corporation
Jeff Ravencraft	Intel Corporation
Brad Saunders	Intel Corporation
Joe Schaefer	Intel Corporation
Sarah Sharp	Intel Corporation
Micah Sheller	Intel Corporation
Gary Solomon	Intel Corporation
Karthi Vadivelu	Intel Corporation
Clint Walker	Intel Corporation
Jim Walsh	Intel Corporation
Randy Aull	Microsoft Corporation
Fred Bhesania	Microsoft Corporation
Martin Bove	Microsoft Corporation
Jim Bovee	Microsoft Corporation
Stephen Cooper	Microsoft Corporation
Lars Giusti	Microsoft Corporation
Robbie Harris	Microsoft Corporation
Allen Marshall	Microsoft Corporation
Kiran Muthabattulla	Microsoft Corporation

1 Introduction

1.1 Background

The original Universal Serial Bus (USB) was driven by the need to provide a user-friendly plug-and-play way to attach external peripherals to a Personal Computer (PC). USB has gone beyond just being a way to connect peripherals to PCs. Printers use USB to interface directly to cameras. Mobile devices use USB connected keyboards and mice. USB technology commonly finds itself in automobiles, televisions, and set-top boxes. USB, as a protocol, is also being picked up and used in many nontraditional applications such as industrial automation. And USB as a source of power has become the mobile device charging solution endorsed by international communities across the globe.

Initially, USB provided two speeds (12 Mbps and 1.5 Mbps) that peripherals could use. As PCs became increasingly powerful and able to process larger amounts of data, users needed to get more and more data into and out of their PCs. This led to the definition of the USB 2.0 specification in 2000 to provide a third transfer rate of 480 Mbps while retaining backward compatibility. By 2006, two things in the environment happened: the transfer rates of HDDs exceeded 100MB/s, far outstripping USB 2.0's ~32MB/s bandwidth and the amount of digital content users were creating was an ever increasing pace. USB 3.0 was the USB community's response and provided users with the ability to move data at rates up to 450MB/s while retaining backward compatibility with USB 2.0.

Now, with the continued trend for more bandwidth driven by larger and faster storage solutions, higher resolution video, and broader use of USB as an external expansion/docking solution, USB 3.1 extends the performance range of USB up to 1GB/s by doubling the SuperSpeed USB clock rate to 10Gbps and enhancing data encoding efficiency.

1.2 Objective of the Specification

This document defines the latest generation USB industry-standard, USB 3.1. The specification describes the protocol definition, types of transactions, bus management, and the programming interface required to design and build systems and peripherals that are compliant with this specification. USB 3.1 is primarily a performance enhancement to SuperSpeed USB 3.0 resulting in providing more than double the bandwidth for devices such as Solid State Drives and High Definition displays.

This specification refers to Enhanced SuperSpeed as a collection of features or requirements that apply to both USB 3.0 and USB 3.1 bus operation. Additionally, where specific differences exist with regard to the USB 3.0 definition of SuperSpeed features or requirements, those differences will be uniquely identified as SuperSpeedPlus (or SSP) features or requirements – generally, “SuperSpeed” is in reference to 5Gbps operation and “SuperSpeedPlus” is in reference to 10Gbps operation.

USB 3.1's goal remains to enable devices from different vendors to interoperate in an open architecture, while maintaining and leveraging the existing USB infrastructure (device drivers,

Universal Serial Bus 3.1 Specification, Revision 1.0

software interfaces, etc.). The specification is intended as an enhancement to the PC architecture, spanning portable, business desktop, and home environments, as well as simple device-to-device communications. It is intended that the specification allow system OEMs and peripheral developers adequate room for product versatility and market differentiation without the burden of carrying obsolete interfaces or losing compatibility.

1.3 Scope of the Document

The specification is primarily targeted at peripheral developers and platform/adaptor developers, but provides valuable information for platform operating system/ BIOS/ device driver, adapter IHVs/ISVs, and system OEMs. This specification can be used for developing new products and associated software.

Product developers using this specification are expected to know and understand the USB 2.0 Specification. Specifically, USB 3.1 devices must implement device framework commands and descriptors as defined in the USB 2.0 Specification. Devices operating at the new 10Gbps (Gen 2) speed must implement the SuperSpeedPlus enhancements defined in this version of the specification.

1.4 USB Product Compliance

Adopters of the USB 3.1 specification have signed the USB 3.0 Adopters Agreement, which provides them access to a reasonable and nondiscriminatory (RANDZ) license from the Promoters and other Adopters to certain intellectual property contained in products that are compliant with the USB 3.1 specification. Adopters can demonstrate compliance with the specification through the testing program as defined by the USB Implementers Forum (USB-IF). Products that demonstrate compliance with the specification will be granted certain rights to use the USB-IF logos as defined in the logo license.

Starting with USB 3.1, product compliance requirements are being tightened up to prohibit non-certified cables and connectors. Use of any registered icons or logos on products, documentation or packaging will require a license and license requirements will include passing specific product certification.

1.5 Document Organization

Chapters 1 through 4 provide an overview for all readers, while Chapters 5 through 11 contain detailed technical information defining USB 3.1.

Readers should contact operating system vendors for operating system bindings specific to USB 3.1.

Universal Serial Bus 3.1 Specification, Revision 1.0

Term/Abbreviation	Definition
Gen 2	Gen 2 is an adjective used to refer to the Physical layer associated with a 10 Gbps signaling rate.
Gen X	Gen X is a generic term used to refer to any of the combinations Gen 1, Gen 2 or Gen 1/Gen 2 when the topic is specific to the phy layers but does not need to be specific to either Gen 1 or Gen 2. Examples include: Gen X phy/connection.
handshake packet	A packet that acknowledges or rejects a specific condition. For examples, see ACK, NRDY, or ERDY.
header	Packet header. For example, DPH, LMP, and TP are all headers.
Header Sequence Number Advertisement	The exchange of the ACK Tx Header Sequence Numbers between the link partners upon entry to U0.
high-speed	USB operation at 480 Mbps. See also low-speed and full-speed.
host	The host computer system where the USB host controller is installed. This includes the host hardware platform (CPU, bus, etc.) and the operating system in use.
host controller	The interface provided to the system to support devices on the USB.
Hot Reset	Reset mechanism using TS1/TS2 ordered sets.
HPSTART	Frame ordered set used to denote the start of a header packet.
hub	A USB device that provides additional connections to the USB.
Hub Delay Measurement (HDM)	The HDM mechanism of PTM defines a set of hub features that increases the accuracy of the Isochronous Timestamps in the ITPs that they forward downstream.
hub tier	One plus the number of USB links in a communication path between the host and a peripheral device.
ID pin	Denotes the pin on the USB 3.1 Micro connector family that is used to differentiate a USB 3.1 Micro-A plug from a USB 3.1 Micro-B plug.
Inband Reset	Mechanism that relies on SuperSpeed and/or LFPS signaling to propagate the reset across the link.
informative	Information given for illustrative purposes only and contains no requirements. See normative.
interrupt transfer	One of the four USB transfer types. Interrupt transfers have a bounded latency and are typically used to handle service needs. See also transfer type.
isochronous data	A stream of data whose timing is implied by its delivery rate.
isochronous device	An entity with isochronous endpoints, as defined in the USB Specification, that sources or sinks sampled analog streams or synchronous data streams.
isochronous sink endpoint	An endpoint that is capable of consuming an isochronous data stream that is sent by the host.
isochronous source endpoint	An endpoint that is capable of producing an isochronous data stream and sending it to the host.
isochronous transfer	One of the four USB transfer types. Isochronous transfers are used when working with isochronous data. Isochronous transfers provide periodic, continuous communication between host and device. See also transfer type.
ITP	Isochronous Timestamp Packet, sent periodically by a host to inform devices on the USB of the current bus time.
jitter	A tendency toward lack of synchronization caused by mechanical or electrical changes. More specifically, the phase shift of digital pulses over a transmission medium.
KB	Kilobyte or 1,024 bytes.

Universal Serial Bus 3.1 Specification, Revision 1.0

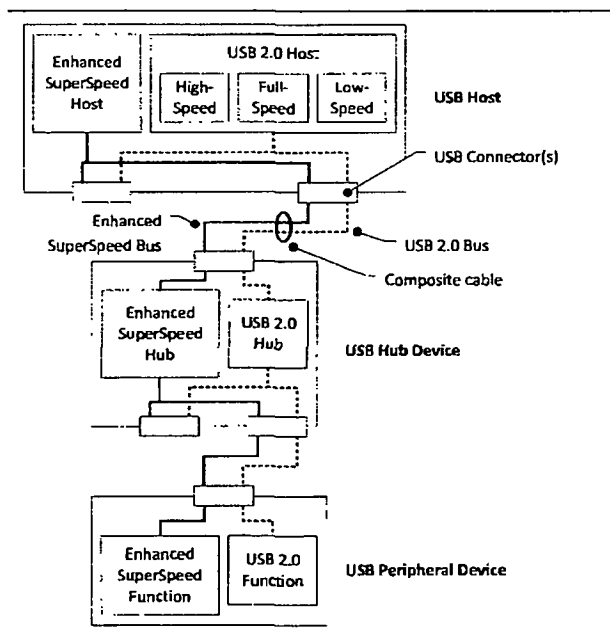


Figure 3-1. USB 3.1 Dual Bus System Architecture

- USB 3.1 interconnect
- USB 3.1 devices
- USB 3.1 host

The USB 3.1 interconnect is the manner in which USB 3.1 and USB 2.0 devices connect to and communicate with the USB 3.1 host. The USB 3.1 interconnect inherits core architectural elements from USB 2.0, although several are augmented to accommodate the dual bus architecture.

The baseline structural topology is the same as USB 2.0. It consists of a tiered star topology with a single host at tier 1 and hubs at lower tiers to provide bus connectivity to devices.

The USB 3.1 connection model accommodates backward and forward compatibility for connecting USB 3.1 or USB 2.0 devices into a USB 3.1 connector. Similarly, USB 3.1 devices

can be attached to a USB 2.0 connector. The mechanical and electrical backward/forward compatibility for USB 3.1 is accomplished via a composite cable and associated connector assemblies that form the mechanical infrastructure for the dual-bus architecture. USB 3.1 peripheral devices accomplish backward compatibility by including both Enhanced SuperSpeed and USB 2.0 interfaces. USB 3.1 hosts have both Enhanced SuperSpeed and USB 2.0 interfaces, which are essentially parallel buses that may be active simultaneously.

The USB 3.1 connection model allows for the discovery and configuration of USB devices at the highest signaling speed supported by the peripheral device, the highest signaling rate supported by hubs between the host and peripheral device, and the current host capability and configuration.

USB 3.1 hubs are a specific class of USB device whose purpose is to provide additional connection points to the bus beyond those provided by the host. In this specification, non-hub devices are referred to as peripheral devices in order to differentiate them from hub devices. In addition, in USB 2.0 the term “function” was sometimes used interchangeably with device. In this specification a function is a logical entity within a device, see Figure 3-4.

The architectural implications of Enhanced SuperSpeed bus support on hosts, hub devices and peripheral devices are described in detail in Section 3.2.

3.1.1 USB 3.1 Physical Interface

The physical interface of USB 3.1 is comprised of USB 2.0 and Enhanced SuperSpeed portions. The USB 2.0 definitions for Electrical can be found in Chapter 7 of the USB 2.0 specification. The Enhanced SuperSpeed definitions are contained in this USB 3.1 specification and comprised of Mechanical (Chapter 5), and Physical Layer (Chapter 6) specifications. The physical layer for the Enhanced SuperSpeed bus is described in Section 3.2.1.

Universal Serial Bus 3.1 Specification, Revision 1.0

3.1.3 USB 3.1 System Configuration

USB 3.1 supports USB devices (all speeds) attaching and detaching from the USB 3.1 at any time. Consequently, system software must accommodate dynamic changes in the physical bus topology. The architectural elements for the discovery of attachment and removal of devices on USB 3.1 are identical to those in USB 2.0. There are enhancements provided to manage the specifics of the Enhanced SuperSpeed bus for configuration and power management.

The independent, dual-bus architecture allows for activation of each of the buses independently and provides for the attachment of USB devices to the highest speed bus available for the device.

3.1.4 USB 3.1 Architecture Summary

USB 3.1 is a dual-bus architecture that incorporates USB 2.0 and an Enhanced SuperSpeed bus. Table 3-1 summarizes the key architectural differences between an Enhanced SuperSpeed bus and a USB 2.0 bus.

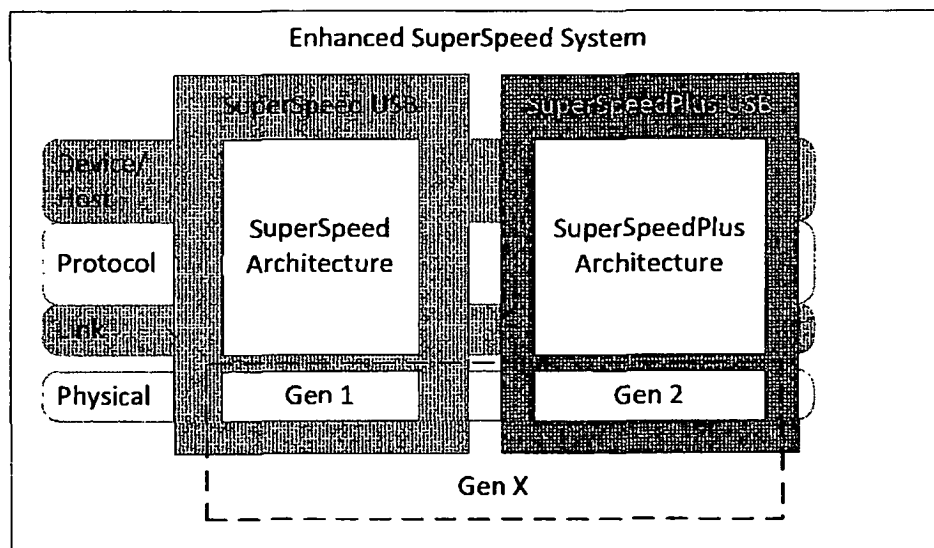
Table 3-1. Comparing Enhanced SuperSpeed Bus to USB 2.0 Bus

Characteristic	Enhanced SuperSpeed USB	USB 2.0
Data Rate	Gen 1 (5.0 Gbps), Gen 2 (10 Gbps)	low-speed (1.5 Mbps), full-speed (12 Mbps), and high-speed (480 Mbps)
Data Interface	Dual-simplex, four-wire differential signaling separate from USB 2.0 signaling Simultaneous bi-directional data flows	Half-duplex two-wire differential signaling Unidirectional data flow with negotiated directional bus transitions
Cable signal count	Six: Four for Enhanced SuperSpeed data path, two for USB 2.0 data path	Two: Two for low-speed/full-speed/high-speed (USB 2.0) data path
Bus transaction protocol	Host directed, asynchronous traffic flow Packet traffic is explicitly routed	Host directed, polled traffic flow Packet traffic is broadcast to all devices.
Power management	Multi-level link power management supporting idle, sleep, and suspend states. Link-, Device-, and Function-level power management.	Port-level suspend with two levels of entry/exit latency Device-level power management
Bus power	Same as for USB 2.0 with a 50% increase for unconfigured power and an 80% increase for configured power	Support for low/high bus-powered devices with lower power limits for un-configured and suspended devices
Port State	Port hardware detects connect events and brings the port into operational state ready for Enhanced SuperSpeed data communication.	Port hardware detects connect events. System software uses port commands to transition the port into an enabled state (i.e., can do USB data communication flows).
Data transfer types	USB 2.0 types with Enhanced SuperSpeed constraints. Bulk has streams capability (refer to Section 3.3)	Four data transfer types: control, bulk, Interrupt, and Isochronous

3.2 Enhanced SuperSpeed Bus Architecture

Figure 3-3 illustrates the reference model for the terminology in this specification.

USB 3.1 Architectural Overview



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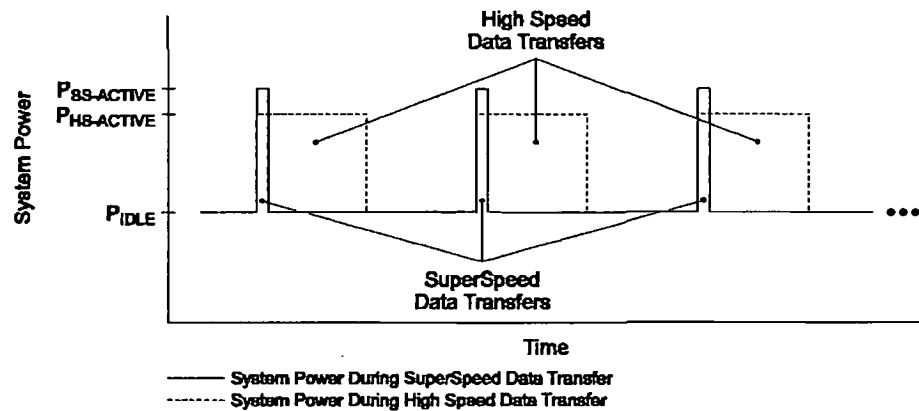
Figure 3-3. USB 3.1 Terminology Reference Model

The Enhanced SuperSpeed bus is a layered communications architecture that is comprised of the following elements:

- **Enhanced SuperSpeed Interconnect.** The Enhanced SuperSpeed interconnect is the manner in which devices are connected to and communicate with the host over the Enhanced SuperSpeed bus. This includes the topology of devices connected to the bus, the communications layers, the relationships between them and how they interact to accomplish information exchanges between the host and devices.
- **Devices.** Enhanced SuperSpeed devices are sources or sinks of information exchanges. They implement the required device-end, Enhanced SuperSpeed communications layers to accomplish information exchanges between a driver on the host and one or more logical functions on the device.
- **Host.** An Enhanced SuperSpeed host is a source or sink of information. It implements the required host-end, Enhanced SuperSpeed communications layers to accomplish information exchanges over the bus. It owns the Enhanced SuperSpeed data activity schedule and management of the Enhanced SuperSpeed bus and all devices connected to it.

Figure 3-4 illustrates a reference diagram of the Enhanced SuperSpeed interconnect represented as communications layers through a topology of host, zero to five levels of hubs, and devices.

Figure C-9 illustrates a sample device that has an average data transfer rate of 20 MBps when actively in use. The figure shows the system power consumption when the device is operating in SuperSpeed mode and also in High Speed mode.



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Figure C-9. System Power during SuperSpeed and High Speed Device Data Transfers

When no data transfer is taking place the system power consumption is P_{IDLE} . P_{IDLE} is approximated to be the same in both SuperSpeed and High Speed modes. Link power management considerations are ignored for simplicity of illustration.

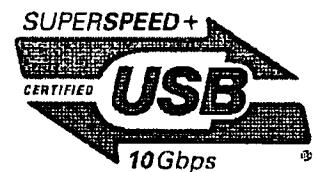
When a data transfer is taking place, the system power is $P_{SS-ACTIVE}$ and $P_{HS-ACTIVE}$ for SuperSpeed and High Speed modes respectively. The difference between $P_{SS-ACTIVE}$ and $P_{HS-ACTIVE}$ is due to the physical layer interface power of the device and its link partner (no hubs present).

Data transfers complete roughly ten times faster in SuperSpeed mode than in High Speed mode. This causes the average system power in High Speed mode to be much larger than the average system power in SuperSpeed mode. The difference in average system power may be as high as 50% during a data transfer. This can have a major impact on the battery life of mobile systems.

Exhibit C

USB Logo Usage Guidelines

USB Logo Usage Guidelines



The Universal Serial Bus (USB) has gone beyond its original intent to connect peripherals to PCs and is now a dominate standard in the interconnect market. USB can be found everywhere from PCs to consumer electronics to mobile devices. Because of its ease of use, speed and expandability, USB is the preferred connection for many consumers. This presents a continued market opportunity for the future.

In order to realize this opportunity, USB products must continue to enhance the consumers' experience through high quality and ease of use. That's why the USB Implementers' Forum, Inc. developed a trademark-protected USB Logo(s), USB ON-THE-GO Logo(s), Wireless USB Logo(s), SuperSpeed USB Logo(s), SuperSpeed USB 10 Gbps Logo(s), USB Power Delivery Logo(s) and Certified USB Charger Logo(s) for use by qualified parties. To qualify for the right to display these logos, products must pass the specified USB-IF compliance testing for product quality.

The USB-IF SuperSpeed USB Trident Logo is available with and without the “10” label.

The SuperSpeed USB Trident Logo is for use with product that signals at 5 Gbps. The SuperSpeed USB 10 Gbps Trident Logo is for use with product that signals at 10 Gbps.

The SuperSpeed USB Trident Logo may be used solely in conjunction with Product consisting of a cable and connector assembly that signals at 5 Gbps, that has been submitted to and passed the USB-IF Test Procedure for SuperSpeed USB products, and that has been posted on the USB-IF Integrators List; or the USB-IF SuperSpeed USB Trident Logo, solely in conjunction with product other than cable and connector assemblies, based on and compliant with the USB 3.0 and USB 3.1 Gen1 specifications.

The USB-IF SuperSpeed USB 10 Gbps Trident Logo may be used solely in conjunction with Product consisting of a cable and connector assembly that signals at 10 Gbps, that has been submitted to and passed the USB-IF Test Procedure for SuperSpeed USB 10 Gbps products, and that has been posted on the USB-IF Integrators List; or the USB-IF SuperSpeed USB 10 Gbps Trident Logo, solely in conjunction with product other than cable and connector assemblies, based on and compliant with the USB 3.1 Gen2 specification.

**SuperSpeed USB
Trident Logo**



**SuperSpeed USB
10 Gbps Trident Logo**

